

CLAIMS

1. A fluid dynamic pressure bearing comprising, a shaft having a shaft body and a thrust bearing plate which extends in the radial direction all around the outer peripheral surface of the shaft body, and a housing for housing the shaft such that it rotates freely, and with a working fluid filling a gap between the shaft and the housing, wherein
- there is provided an annular dynamic pressure generating face made by forming a dynamic pressure generating groove, which draws a working fluid toward a midway position in the radial direction from the inside and outside of the thrust bearing plate in the radial direction, or toward a position near an outer peripheral rim from the inside in the radial direction, when the shaft and the housing are rotated relative to each other about the axis, on the thickness direction end face of the thrust bearing plate or on an inner surface of the housing facing the end face via a gap, and an inner groove section, which is located on an inner peripheral side of the dynamic pressure generating face and that is depressed more than the dynamic pressure generating face in the thickness direction, and
- there is provided a through hole which passes through the thrust bearing plate in the thickness direction so as

to open to the dynamic pressure generating face, and there is provided a communicating cavity which connects the opening portion of the through hole and the inner groove section.

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2. A fluid dynamic pressure bearing according to claim 1, wherein the communicating cavity is formed by a chamfer section formed in the opening portion of the through hole.

10 3. A fluid dynamic pressure bearing according to claim 1, wherein the communicating cavity is formed using a groove having an equal depth to the inner groove section.

4. A fluid dynamic pressure bearing according to claim 1,
15 wherein

the dynamic pressure generating groove is provided on the thrust bearing plate,

the through hole is provided at a location coinciding with the dynamic pressure generating groove, and

20 the communicating cavity is formed by a part of the dynamic pressure generating groove.

5. A fluid dynamic pressure bearing according to claim 1, wherein the communicating cavity is formed using an
25 inclined groove, which gradually becomes shallower from the

inner groove section toward the opening portion of the through hole.

6. A fluid dynamic pressure bearing according to any one of claim 1 through claim 5, wherein a plurality of the through holes are provided around a central axis of the shaft with equal spacing in the circumference direction.

7. A motor comprising; a fluid dynamic pressure bearing according to any one of claim 1 through claim 6, and a driving device which rotates the housing and the shaft of the fluid dynamic pressure bearing relative to each other.

8. A recording medium driving device, which comprises the motor according to claim 4, and is provided with a fixing section which fixes a recording medium to the shaft or the housing.

9. A fluid dynamic pressure bearing comprising, a shaft having a substantially cylindrical shaft body, and a substantially cylindrical housing which has a shaft body insertion hole for accommodating the shaft body rotatably,

and on an outer peripheral surface of the housing is provided a flange shaped thrust bearing plate that extends in the radial outward direction all around the periphery,

and on the shaft is provided a thrust bearing plate which faces an end face in the thickness direction of the thrust bearing plate via a gap, and

there is provided an annular dynamic pressure generating face made by forming a dynamic pressure generating groove, which draws a working fluid toward a midway position in the radial direction from the inside and outside of the thrust bearing plate in the radial direction, or toward a position near an outer peripheral rim from the inside in the radial direction, when the shaft and the housing are rotated relative to each other about the axis, on the thickness direction end face of the thrust bearing plate or on an inner surface of the housing facing the end face via a gap, and an inner groove section, which is located on an inner peripheral side of the dynamic pressure generating face and that is depressed more than the dynamic pressure generating face in the thickness direction, and

there is provided a through hole which passes through the thrust bearing plate in the thickness direction so as to open to the dynamic pressure generating face, and there is provided a communicating cavity which connects the opening portion of the through hole and the inner groove section.

10. A fluid dynamic pressure bearing according to claim 9, wherein the communicating cavity is formed by a chamfer section formed in the opening portion of the through hole.

5 11. A fluid dynamic pressure bearing according to claim 9, wherein the communicating cavity is formed using a groove having an equal depth to the inner groove section.

12. A fluid dynamic pressure bearing according to claim 9,
10 wherein

the dynamic pressure generating groove is provided on the thrust bearing plate,

the through hole is provided at a location coinciding with the dynamic pressure generating groove, and

15 the communicating cavity is formed by a part of the dynamic pressure generating groove.

13. A fluid dynamic pressure bearing according to claim 9, wherein the communicating cavity is formed using an
20 inclined groove, which gradually becomes shallower from the inner groove section toward the opening portion of the through hole.

14. A motor comprising; a fluid dynamic pressure bearing
25 according to any one of claim through claim 13, and a

driving device which rotates the housing and the shaft of the fluid dynamic pressure bearing relative to each other.

15. A recording medium driving device, which comprises the
5 motor according to claim 14, and is provided with a fixing
section which fixes a recording medium to the shaft or the
housing.